Nov. 12, 1968 R. W. FREET ET AL 3,410,385

VENDING MACHINE

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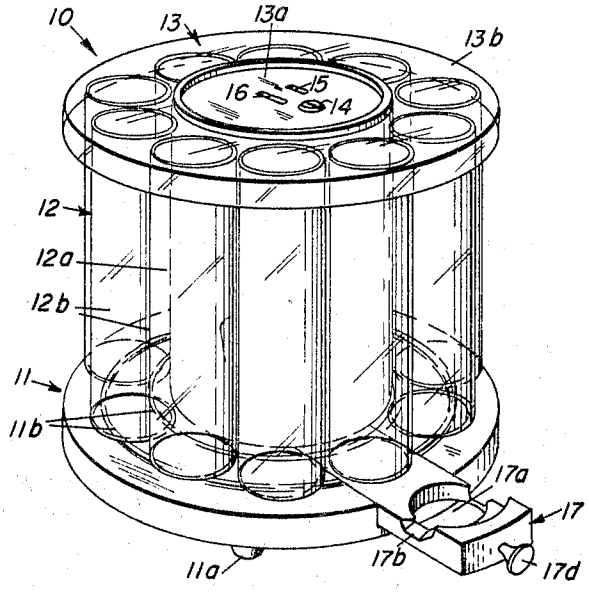


FIG. 1

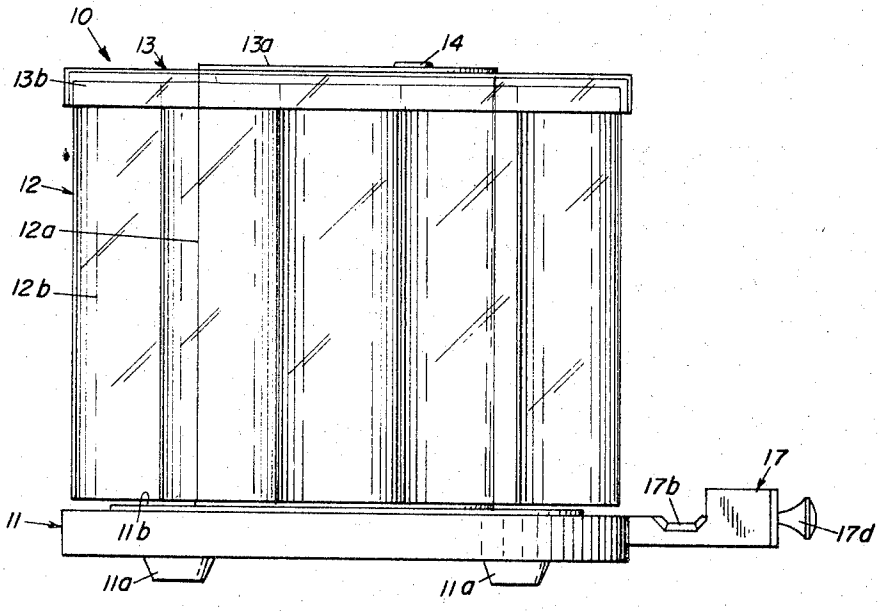


FIG. 2

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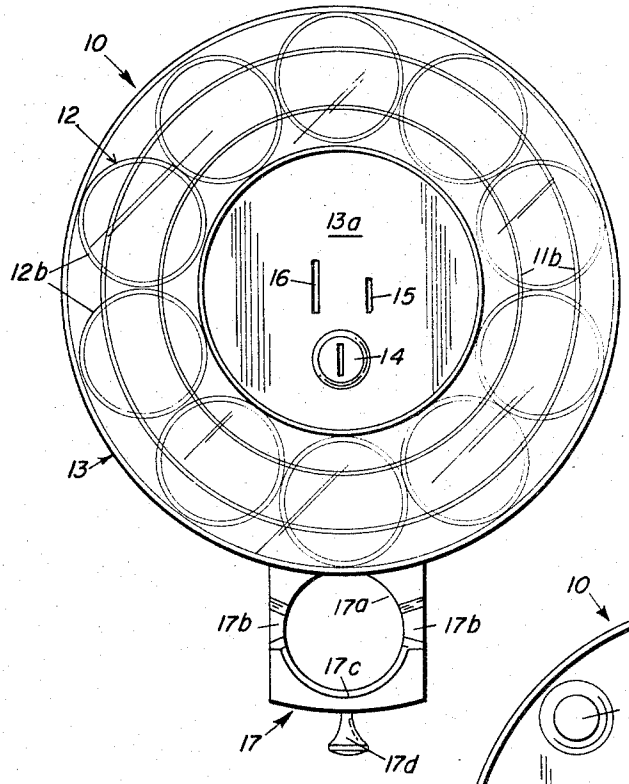


FIG. 3

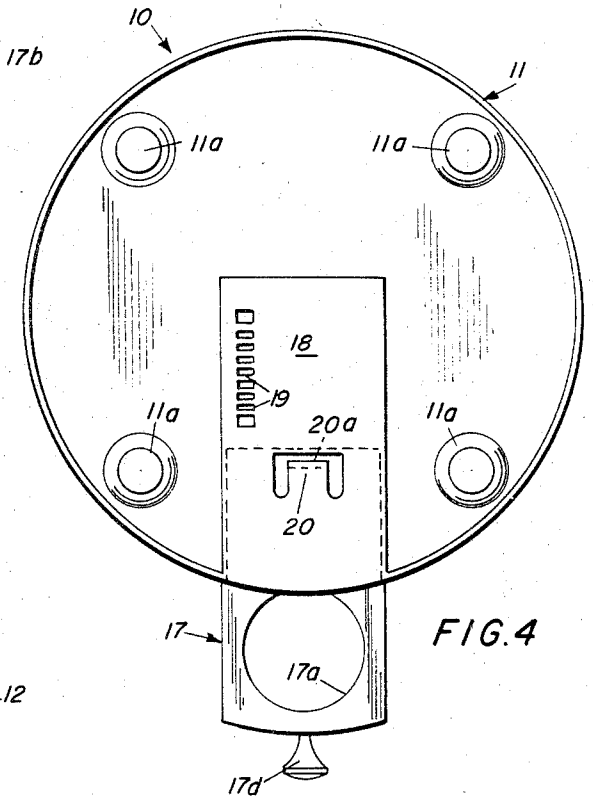


FIG. 4

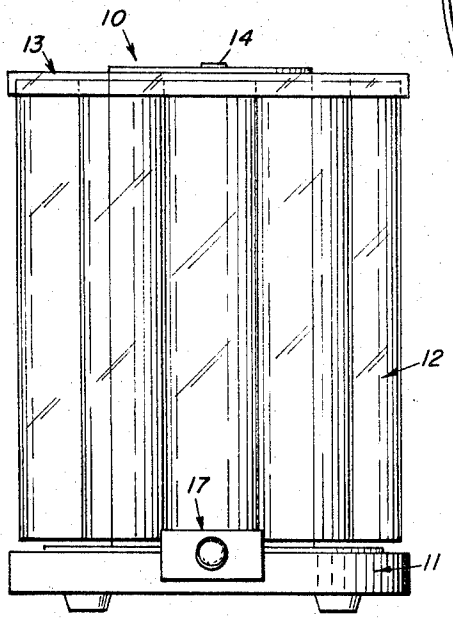


FIG. 5

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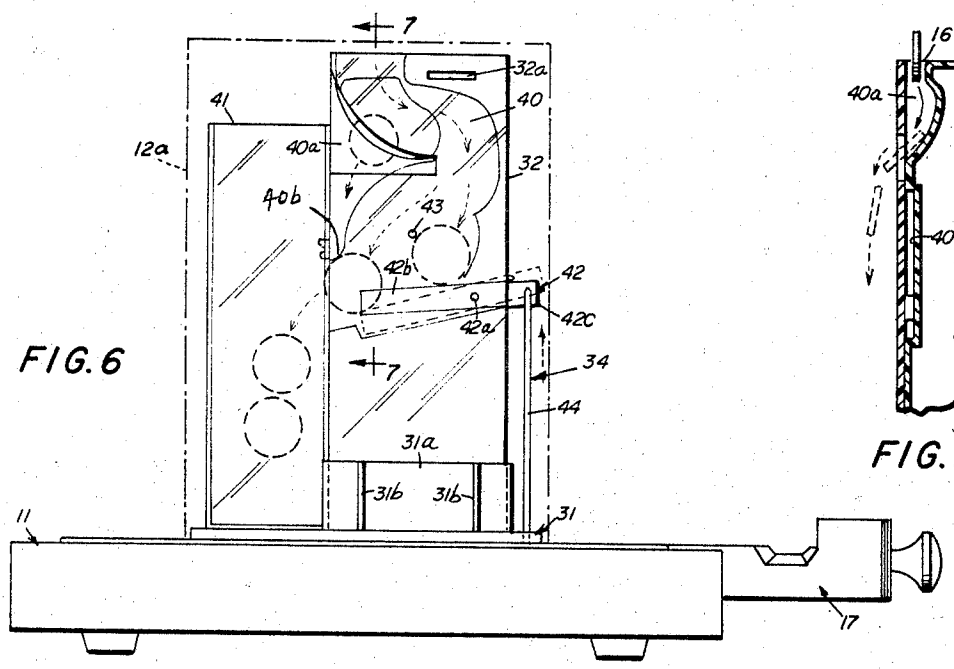


FIG. 6

FIG. 7

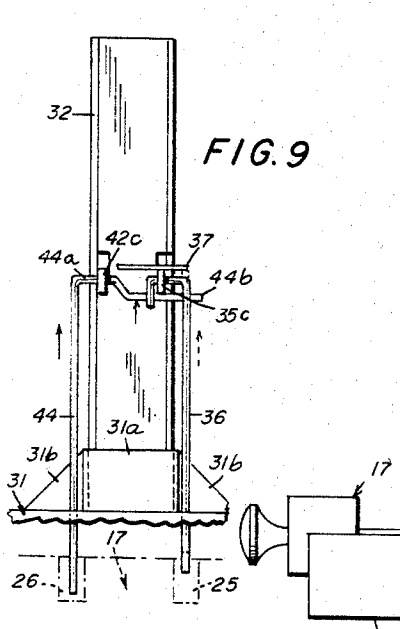


FIG. 9

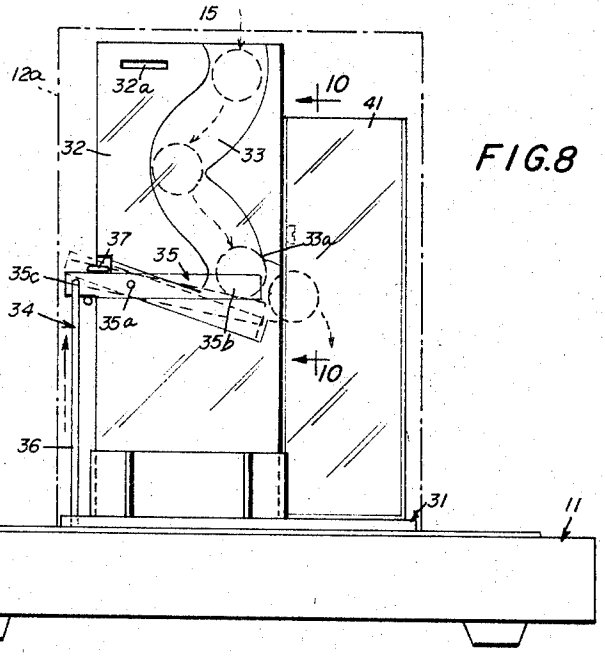


FIG. 8

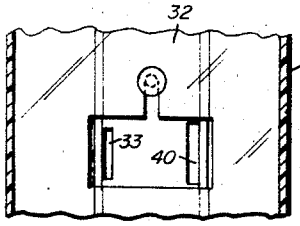


FIG. 10

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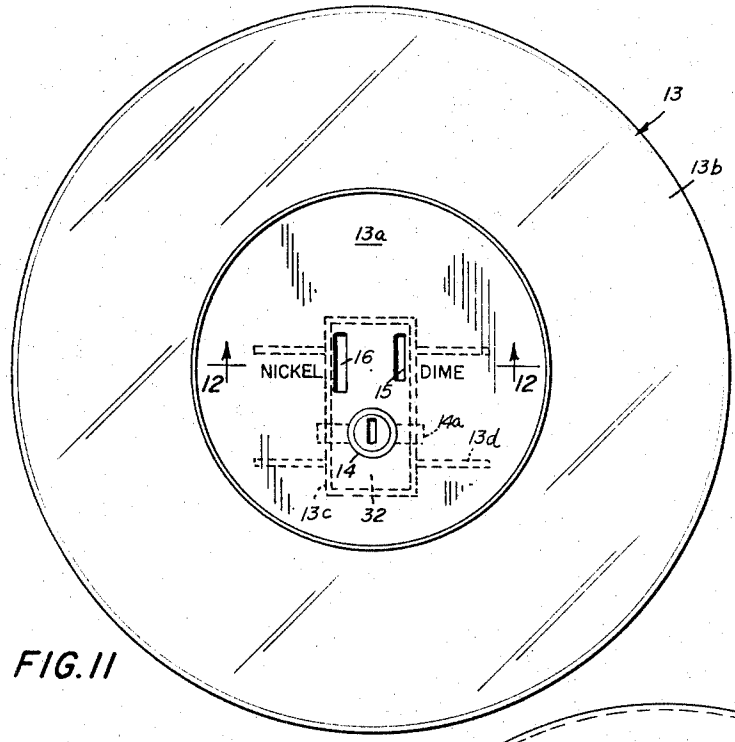


FIG. 11

FIG. 12

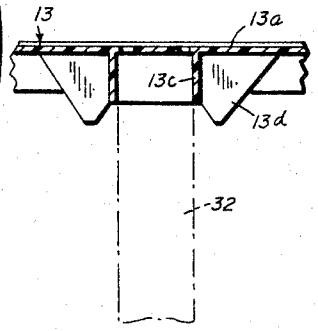
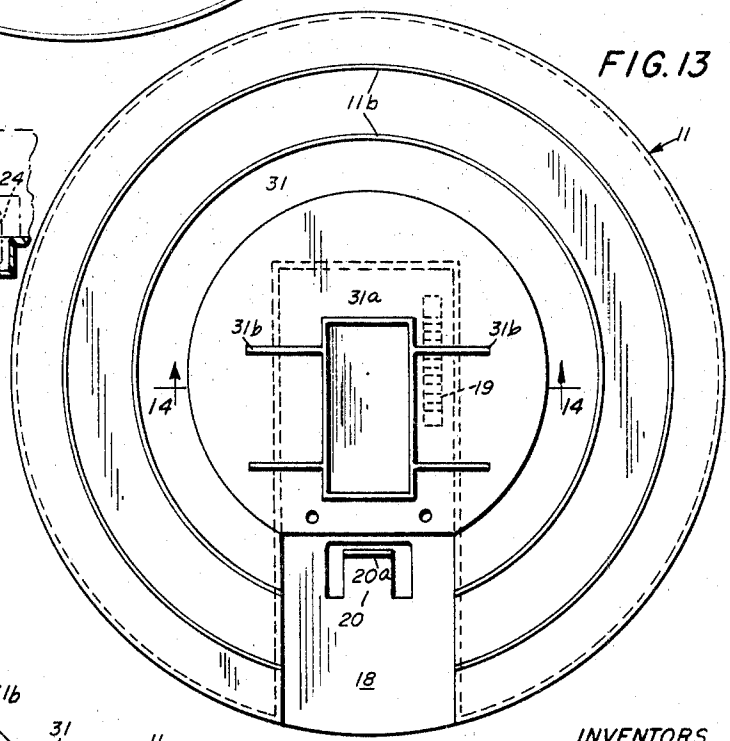


FIG. 13



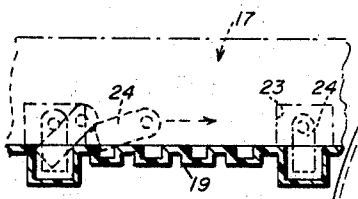
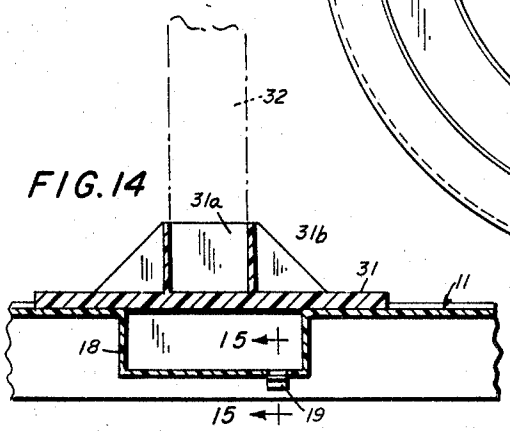


FIG. 15

FIG. 14



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VENDING MACHINE

Filed July 3, 1967 6 Sheets-Sheet 5

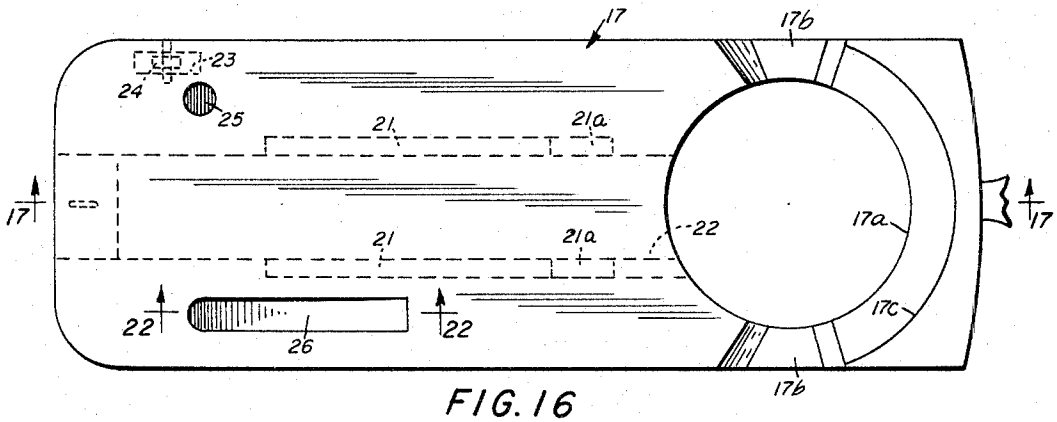


FIG. 16

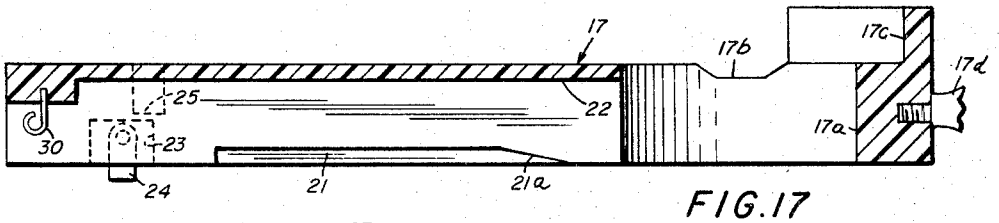


FIG. 17

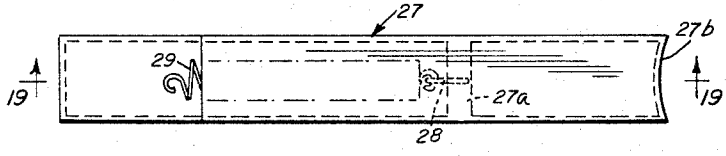


FIG. 18

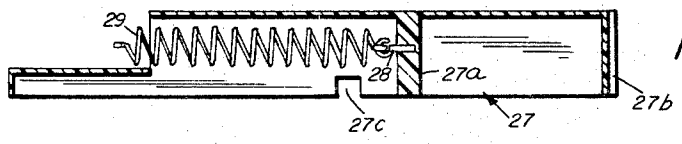


FIG. 19

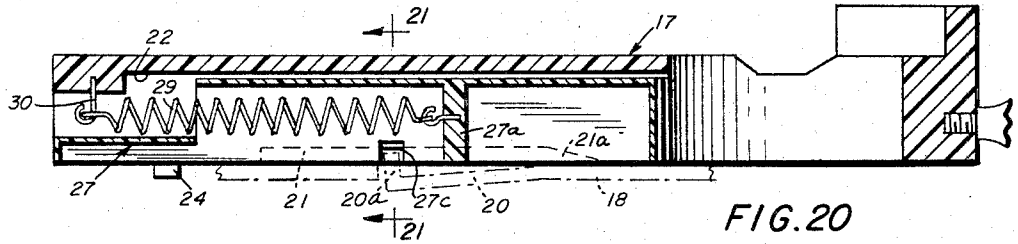


FIG. 20

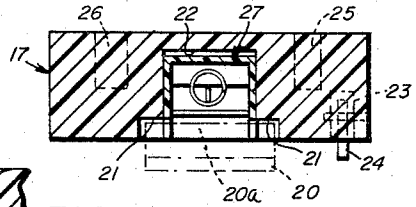


FIG. 21

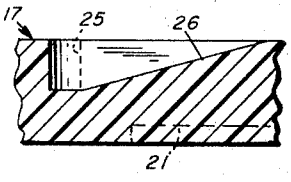


FIG. 22

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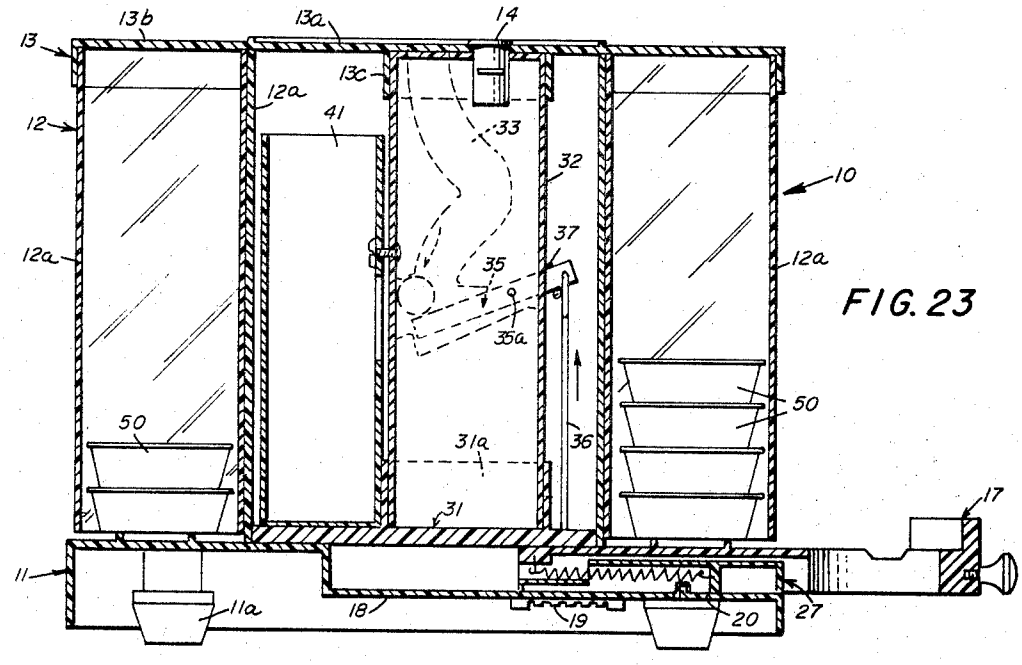


FIG. 23

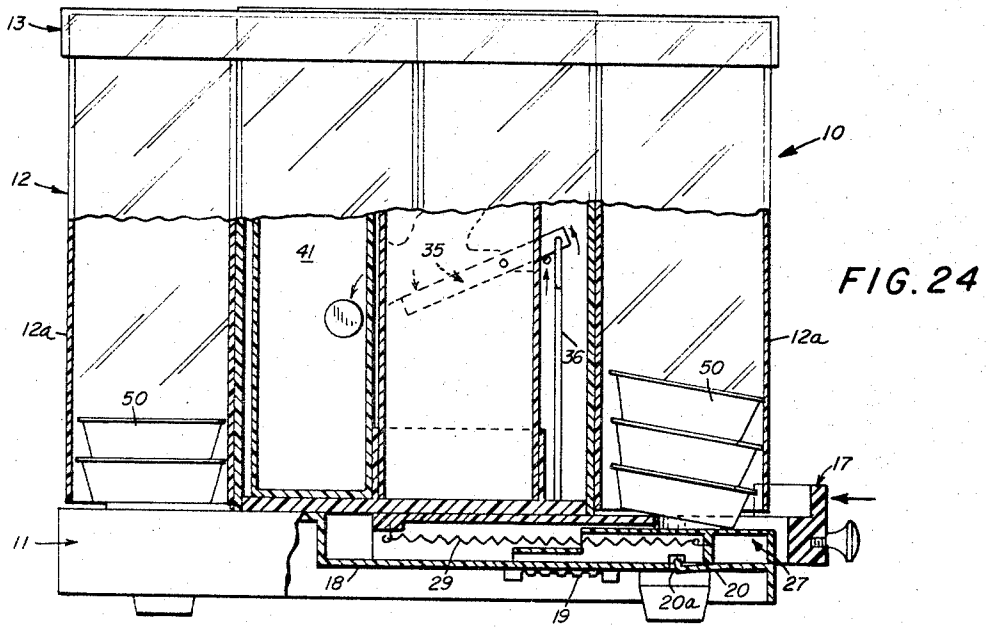


FIG. 24

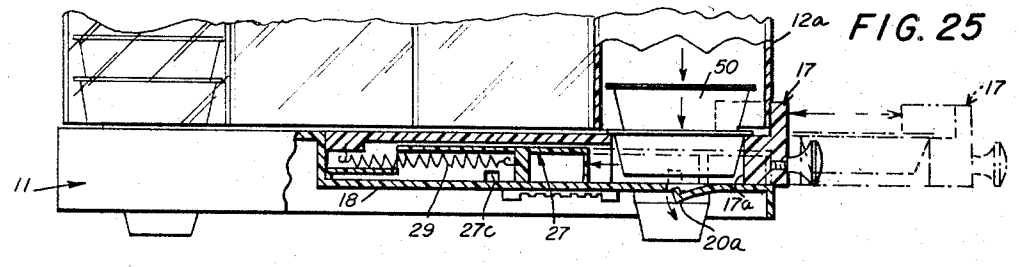


FIG. 25

United States Patent Office 3,410,385
Patented Nov. 12, 1968

3,410,385

VENDING MACHINE

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Filed July 3, 1967, Ser. No. 650,685
6 Claims. (Cl. 194—39)

ABSTRACT OF THE DISCLOSURE

A check controlled dispenser for small flat cuplike articles stored in transparent vertical tubes arranged in an annular manner and rotatable to a dispensing position about a central tower mounted on a base. The base has a radially extending article receiving slide to receive an article under one of the vertical tubes brought into dispensing position thereabove. The central tower supports a removable locked on transparent top having two different slots to receive checks of different size to operate the machine, such as one dime for one and two nickels for the other. The tower has a wrong check rejector for each denomination of check and check passages leading to check receiving pivoted arms connected with lock means for the dispensing slide. Passages in the tower lead to a check collecting container positioned adjacent the tower. The lock means for the slide includes a vertically extending rod connected with one of the check receiving pivoted arms that is moved vertically out of a recess in the slide by a check of one size or by a cross connection means from the other check receiving pivoted arm. The other check receiving pivoted arm is connected to a vertically extending rod that rides in a camming ramp in the slide so that on unlocking of the slide it is permitted to be slid inward to an article pick-up position and the camming ramp moves the vertical rod riding thereon upward to pivot the check receiving pivoted arms to pivot further so as to release the checks resting thereon and permitting them to roll into the check collecting container.

FIELD OF INVENTION

This invention relates to a check-controlled article vending machine having rotatably mounted stacked source supplies, rotatable relative to a common outlet, with means assuring alignment of the stacked source and a dispensing outlet and having check-controlled lock release article delivery by a radially sliding carrier.

DESCRIPTION OF THE PRIOR ART

U.S. Patent 462,024, issued in 1891, shows a coin-operated vending machine in which a lever *f* normally prevents movement of a dispensing pusher f^1 shown in FIG. 5 of the patent. When a coin falls onto the lever, the lever is tilted to the position shown in FIG. 6 of the patent. This permits the pusher f^1 to move to the right and thus causes dispensing of an article and further movement of the lever so the coin will fall into the coin receptacle.

U.S. Patent 3,162,287 of 1964 discloses a vending machine with a rotatable magazine for the articles to be dispensed and a coin-controlled swingable pusher to dispense an article from the bottom of a selected stack of the magazine.

Applicant provides in such a type of vending machine, a novel coin control of two denominations, for example, nickels and dimes, that positively operates a lock release of a radially movable in and out slidable dispenser which slide dispenser movement in the in direction to article loading position trips the coin lock release mechanism to release the coin to a coin receptacle. There is provided in the slide dispenser a slidable retractable barrier member that prevents an article from becoming jammed in its

downward movement onto the slide dispenser. The coin control mechanism provides a tamper proof vending machine.

Summary

This vending machine has provided therein a compact multiple article selection, positive acting, jam free article, coin controlled lock release of dispensing slide with slide movement causing coin drop and reset of the lock release mechanism. It lends itself to ease of fabrication such as from plastic material and is relatively inexpensively produced and maintained.

For a more complete understanding of the nature and scope of the invention reference is made to the drawings, description and claims.

FIG. 1 is a front perspective view of the machine with the dispensing slide in out position;

FIG. 2 is a side elevation as viewed from approximately the left side of FIG 1;

FIG. 3 is a top plan view of the machine with dispensing slide pulled out;

FIG. 4 is a bottom plan view of FIG. 3;

FIG. 5 is a front elevational view of FIG. 3;

FIG. 6 is a side elevation on an enlarged scale similar to FIG. 2 with the top and storage unit removed showing one size of checks which requires two to operate the lock means;

FIG. 7 is an enlarged sectional view on line **7—7** of FIG. 6 showing the coin rejection chute;

FIG. 8 is an opposite view from that shown in FIG. 6 and showing another size of checks which only requires one to operate the lock means;

FIG. 9 is an elevational fragmentary view showing the check operating means as viewed at the left of FIG. 8;

FIG. 10 is a sectional view of line **10—10** of FIG. 8 showing the discharge slots for the two different sizes of checks;

FIG. 11 is a top plan view of the transparent cover removed from FIG. 3 on an enlarged scale;

FIG. 12 is a sectional view on line **12—12** of the cover in FIG. 11 showing the slots for the different checks or coin and the cap structure that fits on top of the vertical tower that conducts the checks or coin;

FIG. 13 is a top plan view of the base of the machine;

FIG. 14 is a sectional view on line **14—14** of FIG. 13 of the base;

FIG. 15 is a sectional view of the base along line **15—15** of FIG. 14 showing the means to prevent reverse movement of the dispensing slide in the base;

FIG. 16 is a top plan view of the dispensing slide removed from FIG. 1 on an enlarged scale;

FIG. 17 is a sectional view of the slide along line **17—17** of FIG. 16;

FIG. 18 is a top plan view of a barrier member that slides in the central portion of the slide member of FIGS. 16 and 17;

FIG. 19 is a sectional view along line **19—19** of FIG. 18 of the barrier member showing also a tension spring that holds it in retracted position in the slide;

FIG. 20 is a side elevational sectional view of dispensing slide of FIG. 17 with barrier member of FIG. 19 mounted therein, tension spring attached and releasable catch for the barrier member shown in broken lines;

FIG. 21 is a sectional view along line **21—21** of FIG. 20;

FIG. 22 is a sectional view along line **22—22** of FIG. 16 showing a camming ramp;

FIG. 23 is a vertical mid-sectional view of the dispensing machine showing dispensing slide pulled to out position and a check or coin in position raising up the lock means permitting the dispensing slide to now be pushed inward;

FIG. 24 is a view of the machine of FIG. 23 with the dispensing slide moved inward to nearly full in position with an article to be dispensed next resting partly on the slide and the retractable barrier member; and

FIG. 25 is a view similar to the machine in FIG. 24 with the slide dispenser fully pushed inward in the machine, the barrier member having been released and slid to the left permitting an article to drop into the dispensing slide.

The type of article, for example, being dispensed is shown at **50** in FIGS. 23, 24 and 25. It is a relative shallow cup-shaped container that may be made of aluminum and has a readily easy peal off top. Instant powder mix for coffee, tea, chocolate drink and the like may be packaged. The powder content of the dispensed packages would be used with hot water or other liquid. Packages containing liquid could likewise be dispensed. Other articles could likewise be dispensed and the vending machine is not limited to these described articles.

A vending machine is generally indicated at **10** for dispensing the article **50** such as shown in FIGS. 23, 24 and 25. The vending machine may be built in various sizes and the one illustrated is a table or desk type. A base **11** is here shown in circular form having feet **11***a* and a radially extending recess to receive a dispensing slide **17** for dispensing the articles **50**. This base is formed with annular ribs **11***b*, see FIG. 13, in its upper face, A rotatably mounted storage member **12** is supported on the base and is made up of a central cylindrical member **12***a* having attached about its periphery vertically extending tubular housings **12***b*. The tubular housings **12***b* are transparent while the central cylindrical member **12***a* may be opaque. A removable top **13** is received on the storage compartment **12** and has a central circular opaque member **13***a* surrounded by an annular transparent top portion **13***b* which has a depending peripheral skirt in its outer edge and at its bottom center portion a depending rectangular collar **13***c*, see FIG. 12, to receive the top of a tower **32** to be described. This rectangular collar **13***c* has supporting ribs **13***d*. In the top portion **13***a* are coin slots **15** and **16** respectively for dimes and nickels and a suitable key operated lock **14** for securing the top to the tower as will be described.

The transparent tubular housings **12***b* permit viewing of the articles to be dispensed. The storage **12** is rotatable about a circular base plate **31** on the top central portion of base **11** as shown in FIGS. 14 and 23–25. The lock **14** has a keeper portion **14***a*, see FIG. 11, which locks in suitable slots **32***a*, see FIG. 6, in the tower **32**.

A dispensing slide **17** is received in the recess **18** in the base as shown in a number of the figures. This slide **17** is locked in out position and by suitable coin operated locking means to be described, is released for inward sliding movement under a selected tubular housing **12***b* to receive an article **50** such as shown in FIG. 25 so as to dispense the same. These articles **50** are gravity fed into a recess **17***a* in the slide which has diametrically disposed apertures **17***b* for finger grasp of the rim of the article **50**, see FIG. 25. The slide **17** has an arcuate portion **17***c* which assures rotary alignment of the selected tube **12***b* carrying the selected article or articles to be dispensed. A suitable know **17***d* for finger grasp pushing and pulling of the slide is provided.

In the base there is provided a row of pockets **19**, see FIGS. 4, 14 and 15, that cooperate with a pivoted detent **24** mounted on the slide **17** as will be described. The slide receiving pocket portion **18** in the base **11** is formed with a tongue **20**, see FIG. 4, having a lip **20***a* that cooperates with a barrier member **27** slidable in the slide member **17**, more fully described. In the slide shown in FIGS. 16, 17 and 20 there is a longitudinal recess **22** to receive the barrier member **27** and adjacent this recess **22** are oppositely disposed cam tracks **21** each having a ramp portion **21***a* for co-operation with the tongue member **20** and its lip **20***a* which are wider than the barrier member **27**, see FIG. 20. In the slide **17** is a pocket **23**, see FIG. 17, which receives the detent **24** that is mounted on a pivot pin **24***a*. Also in the slide **17** is a vertically extending aperture **25** in the top to receive the lock rod **36** as shown in FIGS. 8, 23 and 24. This lock rod **36** is coin operated as will be described. Still referring to the slide **17**, FIGS. 16 and 20, there is a cam ramp **26** oppositely positioned from the lock aperture **25** that operates the vertical rod **44**, see FIG. 9. This rod **44** further tilts the coin levers **35** and **42** to be described.

The barrier member **27** as shown in FIGS. 18–21 has a vertical web **27***a* projecting downward and an arcuate front face **27***a* at one end melding in with the circular portion **17***a* in the slide **17**. Attached to the vertical web **27***a* is a hook **28** to which is attached the end of a tension spring **29**, the other end of which is attached to a hook **30** carried by the rear end of the slide **17**.

The base **11** has mounted on its top the secondary base member **31** having a rectangular upstanding collar **31***a* reinforced by reinforcing webs **31***b* to receive the tower **32** of the coin operated mechanism. At the top of this tower are oppositely disposed slots **32***a* for receiving lock keepers **14***a* therein. In the tower **32** which is of rectangular cross-sectional shape there is a coin or check chuteway, or guideway **33**, for example, for dimes on one side and on the oppositely disposed side is a chuteway **40** for checks such as nickels. On the tower and cooperating with the chuteway **33** is a pivoted lever **35** for dimes mounted by a pivot pin **35***a* to the tower and having a check receiving portion **35***b* thereon at one end which cooperates with the bottom portion of the chuteway at **33***a* to hold a dime or check at that position as shown in FIG. 8. The other end of the lever **35** is indicated at **35***c* and this has pivotally attached thereto a lockrod **36** which extends vertically and has its lower end seating in the aperture **25** in the slide **17** when the slide is in out position. A spring wire **37** is anchored in the tower and extends transversely over the lever portion **35***c* and is of sufficient resiliency to prevent the dime from fully moving the lever **35** downward so that the dime rests on the portion **35***b* and against the chuteway portion **33***a* until the lever is further pivoted as will be explained.

The nickel chuteway **40** has a wrong coin reject passage **40***a* shown in FIG. 7 by illustration. The chuteway **33** for dimes likewise has such a wrong coin reject passage as shown. The lower wall portion **40***b*, see FIG. 6, cooperates with the lever portion **42***b* to hold the second deposited nickel under the setup here provided from being ejected. The first nickel is lodged against the lever **42** on its upper side and then directed by the transverse guide pin **43** into passage **40**. Thus the two nickels are held on the lever **42** until further pivoted as will be explained. The lever **42** is mounted on the pivot post **42***a* attached to the tower **32** and its check receiving portion is indicated at **42***b* while the opposite portion **42***c* is connected to a vertical rod **44** having a transverse portion **44***a* pivoted to **42***c* and a further transverse portion **44***b* which extends across and under the lever portion **35***c* at the other side of the tower. The bottom of rod **44** rides on the ramp **26** in the slide.

Operation

When a dime, for example, is dropped in the slot **15** it passes down the guideway or chute **33**, see FIG. 8, and lodges on the end **35***b* of the lever **35** and against the chute portion **33***a* and urges up the other end of the lever **35***c* against the resilient spring **37** and at the same time pulls up the lock rod **36** so that it is clear of the vertical aperture **25** in the slide **17**, the slide having been in the out and locked position. The slide is now pushed inward and as it is pushed inward, see FIG. 20, the lip **20***a* attached to the base **11** holds the barrier member **27** in a stationary position while the slide **17** moves to the left or inward. This positions the barrier member **27** as shown

in FIGS. 23 and 24, below the bottom article **50** and within the circular aperture **17***b* of the slide so as to prevent the bottommost article **50** from becoming jammed. As the slide **17** is pushed further inward, the tongue **20***a* rides on the cam portion **21** until it strikes the ramp portion **21***a* which moves this down and out of the slot **27***c* in the barrier whereupon the spring **29** pulls the barrier to the left and out from under the lowermost article **50** and from the aperture **17***b* in the slide permitting the bottommost article **50** to drop into the slide aperture **17***b*. Also as the slide **17** is moved inward, the cam ramp **26**, in which the lower end of rod **44** rides, see FIG. 9, moves the rod **44** upward and tilts the lever **42** further so that it trips the dime lever **35**, permitting the dime to drop into the coin receptacle **41**.

If two nickels are used in the particular setup of this dispenser, they are dropped into the slot **16** and the first nickel goes through the guideway **40** and strikes the transverse guidepin **43** lodging the first nickel adjacent the upper portion of the lever **42** just to the left of the pivot portion **42***a* shown in FIG. 6 in a manner that does not tilt lever **42**. The second nickel strikes the top portion of the first nickel and is carried over the guidepin **43** and is lodged to the left of the first nickel against the upper portion of lever end **42***b* and against the lower portion of guideway **40** and **40***b*. This tilts the lever **42** so that the cross portion **44***a* and **44***b* of the lever **44** raises up the end of lever **35***c* against the check retaining means **37** and the rod **36** out of the lock pocket or aperture **25** in the slide and permits the slide to be unlocked. Here again, the slide is moved inward, and, as it does, the barrier becomes released as explained before, and the bottom end of rod **44** rides in rampway **26** to further tilt the lever **42** and drop the two nickels into the coin receptacle **41**.

The wrong coin reject passage **40***a* is above the passage leading to check receiving pivoted arm connected with the lock means thus a wrong coin inserted into the guideway is rejected before it can enter the lower portion of guideway **40** so as not to act on lever **42**.

There has here been provided a very useful vending machine for small articles of different sorts that may be selected by rotary movement of the storage receptacle **12** into dispensing position. The dispenser slide is positive acting and the barrier member **27** provides for the anti-jamming feature of the article to be dispensed until the receptacle to receive the article in the slide **17***a* is fully lined up with the article to be received therein.

The detent **24** on the slide cooperating with the spaced recesses **19** in the base, namely the bottom of the slide portion **18** of the base, permits movement of the slide in one direction only, until it goes to the full extent of that movement and then the detent pivots and permits the slide to move only to the full extent of the reverse direction. This prevents tampering with the vending machine. The structure provides for fabrication from various materials and particularly from plastic material and therefore affords quantity and economical fabrication.

We claim as our invention:

1. A check operated vending machine for articles, comprising, in combination, a base, a slide mounted on the base and having receiving means thereon for an article to be dispensed, said slide being movable between an in position to receive an article to an out position to dispense said article, a storage for articles to be dispensed mounted on the base for positioning each article for movement into position above the receiving means on the slide, means on the slide cooperating with means on the base to prevent reverse movement of the slide until moved to the extreme slide position in direction of movement, check actuated lock means operatively associated with the base and the slide to lock said slide in an outward position with respect to said storage for articles, said check actuated lock means having operably connected thereto a check receiving means thereon and being responsive to the presence of a check on the check receiving means to move the lock means from locked position with respect to said slide and to hold the check thereon, a check collecting means adjacent said check receiving means, means responsive to inward movement of the slide and cooperating with said lock means to move the lock means and check receiving means to a check releasing position whereby the check receiving means is moved to release said check to said check collecting means and on movement of the slide inward to the article receiving position said slide receiving means receives an article and on movement of the slide outward with the article said lock means resumes its position locking said slide in an outward position, said check actuated lock means and check receiving means operably connected thereto comprising a mounting means on the base, a lever pivoted to the mounting means, a check slot and passage on the mounting means leading to guide a check onto said lever on one side of its pivotal mounting, a rod pivotally connected to the lever to the other side of its pivoted mounting and depending to engage in an aperture in said slide, and a second rod adjacent said first rod, means on said second rod upper end operably connecting it with said lever, said second rod lower end riding on said means on the slide whereby said second rod is moved up as said slide is moved inward and said lever is moved further causing said check receiving means thereon to move permitting said check to drop into said check collecting means.

2. A check operated vending machine according to claim **1** including a second lever pivoted on said mounting means and having a check receiving means thereon, a second check slot and passage on the mounting means leading to guide a check onto said check receiving means on said second lever on one side of its pivoted mounting, the other end of said lever being pivotally connected to said means on the upper end of said second rod connecting it with said first lever, whereby on insertion of a check in said last mentioned slot and passage, said second lever is pivoted to move said means on the upper end of said second rod connecting it with the first lever causing said lock means to unlock said slide and movement inward of said slide from its outward locked position causes said second lever to pivot further permitting release of said check on the check receiving means on the second lever so that the check slides into said coin collecting means.

3. A check operated vending machine according to **1** wherein said slide is mounted in said base, said base having an aperture therethrough communicating with the storage for articles thereabove and leading to said receiving means on said slide therebelow, a barrier slidably mounted on said slide and in one position protruding into said aperture in the slide, said barrier having lock means thereon, bias means connecting the slidable barrier to the slide urging it away from said aperture, releasable lock means cooperating with lock means on the barrier and holding the barrier in said one protruding position against said biasing means and in said aperture in the slide to prevent an article from moving through the aperture in the base, means on said slide for releasing said releasable lock means from said lock means on the barrier as said slide is moved to its inward position whereupon said bias means pulls the barrier from the aperture in said base permitting an article to drop onto said slide.

4. A check operated vending machine according to claim **1** including a second lever, pivotal mounting means mounting the second lever on said mounting means, said second lever having two check receiving means thereon, the first check receiving means positioned to one side of its pivotal mounting and the second positioned adjacent the first, a second slot and passage on the mounting means leading to guide checks to said check receiving means, a barrier means in said guideway positioned above said second lever to intercept a first coin dropped in said

second slot and direct it to lodge on said first check receiving means on the second lever in a position adjacent the second lever pivotal mounting means and not tilting the second lever, the other end of said second lever on the other side of its pivotal mounting means being pivotally connected to said means on the upper end of said second rod connecting it with said first lever, whereby on insertion of a second check in said second slot, the second check strikes the top portion of said lodged first check and is carried over the barrier means in said check guideway and is lodged against the second check receiving means on the second lever and an adjacent portion of the check guideway whereupon said second lever is tilted by the weight of the second check thereon and in turn said first lever is moved causing said lock means to unlock said slide and movement inward of said slide from its outward locked position causes said second lever to pivot further permitting release of said first and second checks lodged on the check receiving means on the second lever so that said last mentioned checks slide into said coin collecting means.

5. A check operated vending machine for articles, comprising, in combination, a base, a slide mounted on the base and having receiving means thereon for an article to be dispensed, said slide being movable between an in position to receive an article to an out position to dispense said article, a storage for articles to be dispensed mounted on the base for positioning each article for movement into position above the receiving means on the slide, means on the slide cooperating with means on the base to prevent reverse movement of the slide until moved to the extreme slid position in direction of movement, check actuated lock means operatively associated with the base and the slide to lock said slide in an outward position with respect to said storage for articles, said check actuated lock means having operably connected thereto a check receiving means thereon and being responsive to the presence of a check on the check receiving means to move the lock means from locked position with respect to said slide and to hold the check thereon, a check collecting means adjacent said check receiving means, means responsive to inward movement of the slide and cooperating with said lock means to move the lock means and check receiving means to a check releasing position whereby the check receiving means is moved to release said check to said check collecting means and on movement of the slide inward to the article receiving position said slide receiving means receives an article and on movement of the slide outward with the article said lock means resumes its position locking said slide in an outward position, said base having an aperture therethrough communicating with the storage for articles thereabove and leading to said receiving means on said slide, and a barrier member slidably mounted on said slide and in one position protruding with respect to said receiving means on said slide to prevent an article from being received by said receiving means on the slide, bias means connected to the slidable barrier member urging it away from said receiving means on the slide, releasable lock means on the base cooperating with lock means on the barrier member and holding the barrier member in said one protruding position to prevent an article from being received by said receiving means on the slide, means on said slide cooperating with said releasable lock means on the base to actuate the same and release said barrier member when said slide is moved fully inward whereupon the bias means pulls the barrier member from said protruding position and an article falls into position on said slide for dispensing on further pulling outward of said slide.

6. A check operated vending machine for articles, comprising, in combination, a base, a slide mounted on the base and having receiving means thereon for an article to be dispensed, said slide being movable between an in position to receive an article to an out position to dispense said article, a storage for articles to be dispensed mounted on the base for positioning each article for movement into position above the receiving means on the slide, means on the slide cooperating with means on the base to prevent reverse movement of the slide until moved to the extreme slid position in direction of movement, check actuated lock means operatively associated with the base and the slide to lock said slide in an outward position with respect to said storage for articles, said check actuated lock means having operably connected thereto a check receiving means thereon and being responsive to the presence of a check on the check receiving means to move the lock means from locked position with respect to said slide and to hold the check thereon, a check collecting means adjacent said check receiving means, means responsive to inward movement of the slide and cooperating with said lock means to move the lock means and check receiving means to a check releasing position whereby the check receiving means is moved to release said check to said check collecting means and on movement of the slide inward to the article receiving position said slide receiving means receives an article and on movement of the slide outward with the article said lock means resumes its position locking said slide in an outward position, and a movable article barrier member associated with said storage for articles to be dispensed and said receiving means on the slide, said barrier member having a first position holding an article from entry into said receiving means on the slide until said article receiving means moves to the in position to receive an article, and a second position wherein it is moved from its article holding position to an article released position, biasing means for the barrier to move it from its first to its second position, holding means for the barrier holding it in its first position, release means for said barrier holding means operatively associated with said slide to release said barrier holding means when said slide is moved inwardly to said article receiving position and means operatively associated with said slide and said barrier to move the barrier to said first position when said slide is moved to said out position.

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